

Notice of Allowability

Application No.

10/696,140

Examiner

Bernard Krasnic

Applicant(s)

SAMADANI, RAMIN

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10-31-2007.
2. ☒ The allowed claim(s) is/are 1-21, 23-24, 26-28, and 30-31 renumbered as 1-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

JINGGE WU
SUPERVISORY PATENT EXAMINER

DETAILED ACTION

1. This Office Action incorporates a Response to Arguments and Reasons For Allowance.

Response to Arguments

2. The Request for Continued Examination filed 10/31/2007 have been entered and made of record.

3. The Applicant has canceled claim(s) 22, 25, and 29.

4. The application has pending claim(s) 1-21, 23-24, 26-28, and 30-31.

5. In response to the Request for Continued Examination filed on 10/31/2007:

The "Objections to the claims" have been entered and therefore the Examiner withdraws the objections to the claims.

The "Claim rejections under 35 U.S.C. 112, second paragraph" have been entered and therefore the Examiner withdraws the rejections under 35 U.S.C. 112, second paragraph.

The "Claim rejections under 35 U.S.C. 101" have been entered and therefore the Examiner withdraws the rejections under 35 U.S.C. 101.

6. The Applicant alleges, "The Examiner appears to have forgotten to include ..." in page 8, and states respectively that the Examiner forgot to include a copy of a Notice of References Cited form that lists the reference Deshpande et al (US 2003/0081854) with the Final Office Action. However the Examiner disagrees because this Notice of References Cited form dated 8/09/2007 has been properly scanned. Please see the PAIR system for more information, see <http://pair-direct.uspto.gov> [status information for unpublished applications is available through Private PAIR only]. But as a courtesy, the Examiner has also included a new Notice of References Cited form once again showing the same information as the Notice of References Cited form dated 8/09/2007.

7. Applicant's arguments, see pages 12-13, filed 10/31/2007, with respect to Nosratinia and Hallapuro have been fully considered and are persuasive. The Applicant alleges, "Indeed, Nosratinia does not teach ..." in page 12, "Hallapuro discloses approximations of the ..." in page 12, "The Examiner does not contend that ..." in page 13, "Since the modification of Nosratinia's ..." in page 13, and "The Examiner has attempted to cast his proposed ..." in page 13, and states respectively that the prior art reference Nosratinia discloses an image enhancement process that enhances a compressed JPEG image whereas the prior art reference Hallapuro discloses the input image would have to be compressed using an approximation [the Applicant calls this approximation a non-DCT transform] of the discrete cosine transform which is contrary to Nosratinia's teaching (a compression process that is different from the process that

was used to compress the image). Therefore the pending claims in this application are in condition for allowance; see the Reasons for Allowance below.

REASONS FOR ALLOWANCE

8. The following is an examiner's statement of reasons for allowance:

Independent claims 1, 12, 20, 28, and 30 are allowable over the prior art of record. Claims 2-11, 13-19, and 31 depend from claim 1, therefore, are allowed. Claims 21, 23-24, and 26-27 depend from claim 20, therefore, are allowed.

Independent claims 1, 28, and 30 recite respectively the limitations of: an input image compressed in accordance with a block discrete cosine transform (DCT) image compression process; a denoiser transform Z having an associated transpose Z' wherein a matrix multiplication between Z and Z' produces a diagonal matrix Λ , $Z=F(D)$, F specifies a nonlinear mapping from coefficients of D to coefficients of Z , and D substantially corresponds to a frequency-domain transform.

Independent claim 12 recites the limitation of: a denoiser transform Z having an associated transpose Z' wherein a matrix multiplication between Z and Z' produces a diagonal matrix Λ , $Z=F(D)$, F specifies a nonlinear mapping from coefficients of D weighted by a common scaling factor to corresponding coefficients of Z , and D substantially corresponds to a frequency-domain transform; wherein the nonlinear mappings are derived from quantization values weighted by the common scaling factor.

Independent claim 20 recites the limitation of: a denoiser transform Z having an associated transpose Z' wherein a matrix multiplication between Z and Z' produces a

diagonal matrix Λ , $Z=F(D)$, F specifies a nonlinear mapping from coefficients of D to coefficients of Z , and D substantially corresponds to a frequency-domain transform; wherein computing the output image comprises computing a base image from a combination of ones of the inverse transforms, computing a ringing correction image based at least in part on computed measures of local spatial intensity variability for pixels of each of the inverse transforms, and combining pixel values from the base image and the ringing correction image.

The combination of these features as cited in the claims in combination with the other limitations of the claims, are neither disclosed nor suggested by the prior art of record.

The closest reference Nosratinia ("Enhancement of JPEG-Compressed Images by Re-application of JPEG" - Journal of VLSI Signal Processing vol 27, pages 69-79, 2001) discloses a method for image enhancement using redundant representations and the quality of quantization and denoising. However, Nosratinia does not teach the limitations cited above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 8:00am-4:00pm and every other Friday 8:00am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic
December 13, 2007


JINGGE WU
SUPERVISORY PATENT EXAMINER